Space Weather Forecast

Issued on Tuesday, 29 August 2023 at 01:27 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Slight chance of isolated Moderate-class flares (R1-R2 Blackouts) continues. Weak coronal mass ejection arrival possible Day 2 (30 Aug) with slight chance of G1/Minor Storms.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Low over the past 24 hours, with only minor Common class flares observed. There are five sunspot regions on the visible disc, three of which are small and simple, however there are three sunspot groups of interest that are more complex.
No new Earth directed CMEs (Coronal Mass Ejections) have been seen in available imagery over the last 24 hours.

Solar Wind / Geomagnetic Activity: Solar winds have been at persisting at background levels around 320-340km/s. The interplanetary magnetic field, Bt, was primarily weak, but with some enhancement from around 28/1700 UTC towards moderate levels. The north-south component, Bz, has been mainly negative (southward directed), varying weakly, but became solidly positive from 28/1700 UTC. Geomagnetic activity was Quiet (Kp 1-2).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was at background levels with no solar radiation storms occurring.

Four-Day Space Weather Forecast Summary

Solar Activity: The current Low solar activity is expected to generally continue during the forecast period, but there is a slight chance of further isolated Moderate flares. A very slight chance of an isolated Strong flare.

Solar Wind / Geomagnetic Activity: A CME may give a glancing impact at Earth sometime on Day 2 (30 Aug), though this is low confidence. There are no other Earth-directed CMEs currently forecast. Wind speeds are currently at background levels, and are expected to remain so until the potential CME arrival mentioned above. The next impact on the solar winds looks to be coronal hole fast wind enhancement which may bring an increase in speeds to slightly elevated levels, 450-500km/s, into Day 4 (01 Sep).

Geomagnetic activity is expected to remain generally Quiet. If the CME glance occurs on Day 2 (30 Aug), activity may become Unsettled to Active with a slight chance of G1/Minor Storm intervals, with any effects easing into Day 3 (31 Aug) before potential coronal hole influence likely increases activity once again into Day 4 (01 Sep).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to persist at background levels, with just a slight chance of enhancement should any larger flares occur from the two larger sunspot regions on the visible disc.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	5	20	5	10
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	20	20	20	20
Very Active	R3 to R5 X	No	5	5	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	5	5
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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